PX 095

AC Dimmer
12 x 2300 W

INSTRUCTION
MANUAL

CONTENTS

Manufacturer reserves the right to make modifications in order to improve device operation.

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1. GENERAL DESCRIPTION

PX095 is a professional AC class dimmer 12 x 2300 W powered with 3 phases, 2 phases or 1 phase. The dimmer controls 12 independent channels, 2.3 kW each. Advanced electronics allows to address easily each channel, to choose the control curve, to set output voltage limitation and preheat level and to determine dimmer answer for the interruption of the DMX control signal as well.

Built-in PLL, soft-start, soft-on and even-off systems allow for the reliable work even in the most difficult conditions. Direct zero cross-over with opto-insulated DMX input guarantee high noise resistance. Tricolour LEDs for monitoring each channel and DMX control signal. The device comes in the 19" casing, 2U high.

2. SAFETY CONDITIONS

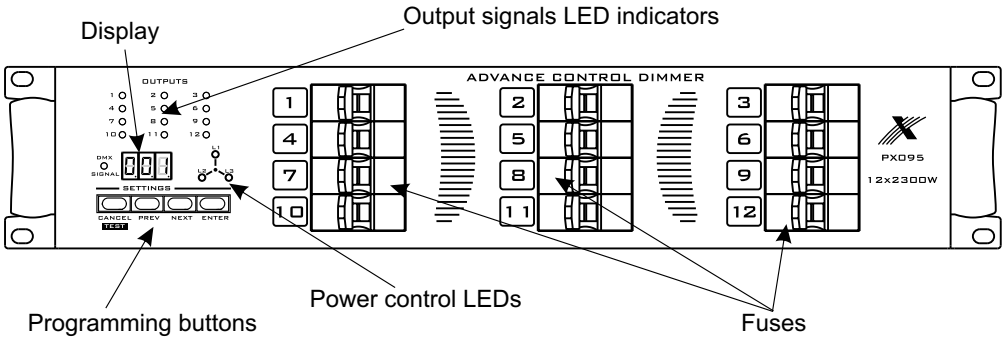
PX095 AC Dimmer is powered directly from standard 230 V grid, what can cause electric shock when safety rules are not observed. Therefore it is necessary to observe the following :

1. Installation, particularly power connection, should be performed by a person holding the appropriate qualifications, according to description in the instruction manual.
2. Dimmer can be connected only to socket which has protecting instalation in working order (3- or 5-wire grid with the separate protective strand).
3. All the conductors should be protected against mechanical and thermal damage.
4. In the event of damaging any conductor, it should be replaced with a conductor of the same technical data and attestations.
5. The external devices can be connected to the dimmer with 3-strand 2.5 mm^2 minimum cross-section area only.
6. Each receiver has to be powered with a separate cable.
7. After the installation is completed, check the neutralization efficacy of all powered devices.
8. All repairs demanding casing opening should be made with cut off power supply.
9. The device should be strictly protected against water and other liquids.
10. All sudden shocks, particularly dropping, should be avoided.
11. Device with damaged (cracked) casing should not be connected to the mains.
12. The device cannot be turned on in places with humidity exceeding 80%.
13. The device cannot be used in places with temperature lower than 2°C or higher than 40°C.
14. Clean with damp duster only - dimmer has to be cut off the power supply.

ATTENTION!!!

1. Improper connection of the protective wire (yellow-green strand) can cause electric shock.
2. Improper connection of the neutral wire (blue strand) automatically switches the dimmer off and activates an acoustic alarm.
3. It is also possible to:
   - connect the black and brown wires to one phase,
   - connect the brown wire to one phase and both black wires to the second phase.

3. FRONT PANEL



SETTINGS
Four buttons for dimmer programming.

DMX SIGNAL
Twinkle LED for DMX signal presence.

1 ... 12
Tricolour output circuits control LEDs, show the control level and, after the TEST button is pressed, the circuit potential malfunction.

TEST
When the dimmer is not in the programming mode (the display shows DMX address), the TEST button forces all outputs to light up at 100% and lights all the 12 LEDs and all the display segments up. It also checks the output lines status (used bulbs).

DISPLAY
During normal operation shows the DMX address of the first channel. During programming mode shows the currently programmed parameter.

L1, L2, L3
Power control LEDs. For the proper work of the dimmer at least L1 LED should be lit up.

4. OUTPUT SIGNAL INTERRUPTION DIAGNOSIS

Three-colours LEDs diagnose status and condition of outputs channels. Their brightness is proportional to light intensity at suitable channel and the LEDs colours (green, yellow, red) mean in order:

- green - channel is ok (working properly)
- yellow - channel is working with individual settings
- red - channel is working improperly or not working. Posibility of damage of cable or bulb.

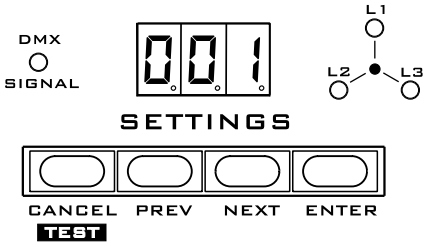
The last function (red sign) is visible while TEST button is pressed and held only. The LEDs that are assigned to damaged channels will turn red, and the others LEDs will light up green.

After the TEST button is released, the dimmer turns back to normal work and all the channels within the damage was diagnosed will be still enabled (applies to software 2.04 version or newer).

5. DIMMER PROGRAMMING

After turning the dimmer on the self-test is being made and the software version appears on the display. When the dimmer operates in a standard mode, the number of the first channel is displayed. Press ENTER to enter the main menu, ALL will be displayed. Press PREV or NEXT to choose the required programming (ALL, Ind, dEF) or measurement (Fun) menu and press ENTER to confirm your selection.

5.1. MOVING AROUND THE MENU



cancel - leaves the currently programmed parameter without saving changes or returns to the higher level in the menu;
by pressing this key during standard operation mode you can check the output circuits status as well

prev - scrolls the menu backwards or decreases the values set

next - scrolls the menu forwards or increases the values set

enter - enters the programming mode (submenu) or approves the values set

5.2. DISPLAYED MESSAGES MEANING

- ALL - group parameters
- Ind - individual parameters
- Fun - measurement functions
- dEF - scenes and chasers programming
- Adr - channels' DMX address
- Cur - dimming characteristics
- ACL - output voltage limitation
- PrE - preheat - bulbs' filaments preheating
- noS - dimmer reaction to DMX signal interruption
- L In - linear characteristics
- SP - switchable (on/off) characteristics
- Inv - inverted characteristics
- LnU - logarythmic characteristics
- E_P - exponential characteristics
- nE1 - nE3, characteristics for neon lamps control
- C01 - C01 to C12, dimmer output channels
- F01 - F01 to F12, programmable chaser steps
- FAd - chaser - smooth step-to-step fading
- SPd - chaser speed
- PAS - access lock setting
- Enb - access lock enabled
- dSb - access lock disabled
- bAd - incorrect password
- Loc - programming disabled - call service
- Sc1 - Sc1 to Sc3 - scenes to render in case of DMX signal absence
- CrF - factory-defined chaser
- CrP - programmable chaser
- HLd - holding up all control parameters (no DMX)
- ⁻-L - slowly dimming all the outputs (no DMX)
- °C - device internal temperature
- U 1 - U1, U2, U3 - voltage on the particular power supply phases

5.3. GROUP PARAMETERS PROGRAMMING (ALL menu)

Programming in this menu is common for all chanels. After ALL is chosen in the main menu, press ENTER and select the parameters with NEXT or PREV keys: Adr - dimmer DMX address, CUr - dimming characteristics, ACL - output voltage limitation, PrE - preheat, noS - dimmer reaction to DMX signal interruption and confirm your selection by pressing ENTER.

ATTENTION: programming in the ALL menu deletes all settings previously defined for the individual channels.

5.3.1. DMX address

After Adr has been selected in the ALL menu, press ENTER. With NEXT or PREV keys set the required DMX address (you may choose from 1 to 501 values) and press ENTER. The defined address will be set for the first channel. The subsequent DMX addresses will be ascribed automatically to the successive channels. When the address is set as 1, channel no. 12 will have set address 12. Choose another parameter to be set or return to the previous menu by pressing CANCEL.

5.3.2. Characteristics

After CUr has been selected in the ALL menu, press ENTER. With NEXT or PREV keys choose a required dimming characteristics and press ENTER again.

- LIn - linear
- S_P - switchable (on / off)
- InU - inverted linear
- LnU - logarythmic
- E_P - exponential
- nE1 nE2 nE3 - characteristics for neon lamps control

Choose another parameter or press CANCEL to return to the main menu.

5.3.3. Output voltage limitation

After ACL has been selected in the ALL menu, press ENTER. With NEXT or PREV keys choose a value in a range from 50 to 230 and press ENTER again. The power of output circuits is limited in proportion to the voltage value adjusted. Choose another parameter to set or return to the main menu by pressing CANCEL.

5.3.4. Bulbs preheating

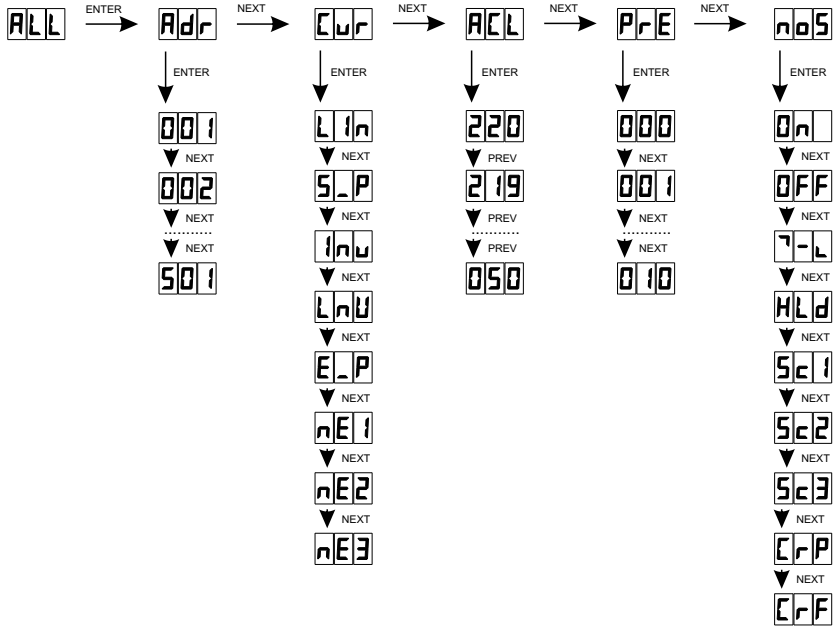
After PrE is selected in the ALL menu, press ENTER. With NEXT or PREV keys set the value in a range from 0 to 10 and press ENTER. Choose another parameter to set or return to the main menu by pressing CANCEL.

5.3.5. Device reaction to DMX signal interruption

After noS has been selected in the ALL menu, press ENTER. With NEXT or PREV keys choose a required option and press ENTER again.

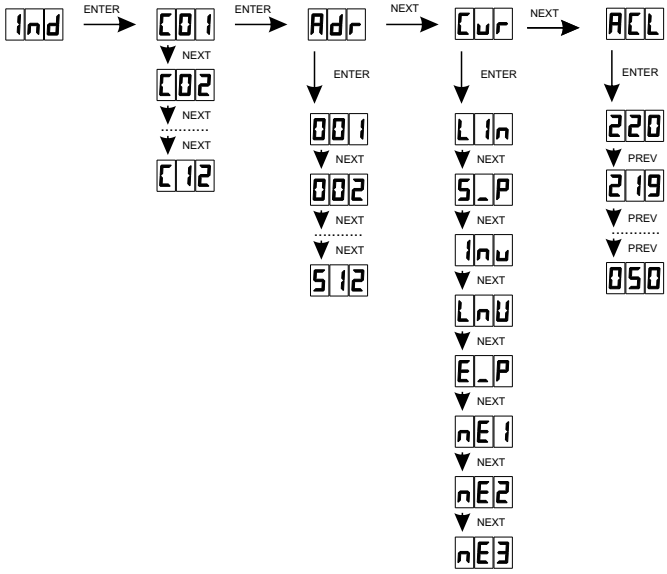
- Sc1 Sc2 Sc3 - scenes, that can be programmed in the dEF menu,
- On - turning all the outputs on at 100%,
- OFF - turning all the outputs off,
- SLo - slow dimming of all the outputs (20 seconds approx.),
- HLd - all the control values, that have been set before the DMX signal faded, are held,
- CrF - factory-defined chaser,
- CrP - programmable chaser.

5.3.6. ALL menu scheme



5.4. INDIVIDUAL PARAMETERS PROGRAMMING (Ind menu)

5.4.1. Ind menu scheme



5.4.2. Individual parameters programming description

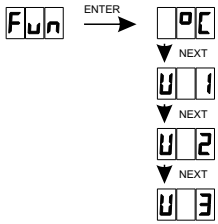
In this menu the individual parameters for each of the 12 channels can be set. When [Ind] has been selected in the main menu, press ENTER.

1. With the NEXT or PREV keys choose a channel to be set ([C01]...[C06]) and press ENTER.
2. The [Adr] will show on a display. Press ENTER, to set the DMX address for the edited channel. With NEXT or PREV keys select the value from 1 to 512 and press ENTER again.
3. Press NEXT key, [Cur] will be displayed. Press enter to set the dimming characteristics for the edited channel. With NEXT or PREV keys choose a required characteristics and press ENTER again (refer to chapter 5.3.2 for the characteristics' description).
4. Press NEXT, [ACL] will be displayed. Press ENTER to limit the output voltage for the edited channel. With NEXT or PREV keys set the value from the range from 50 to 230 and press ENTER again.
5. Press CANCEL key to return to [Ind] menu and set all the remaining channels, according to the procedure described above.
6. Press CANCEL to return to the main menu.

5.5. MEASUREMENT FUNCTIONS (Fun menu)

In this menu you can check the temperature inside the dimmer and the voltage at all three power supply phases. After [Fun] has been selected in the main menu, press ENTER. With NEXT or PREV keys choose a parameter you want to inspect and press ENTER. The value of a selected parameter will be displayed. [U 1], [U 2], [U 3] are for power supply voltage and [°C] is for the dimmer internal temperature. Press CANCEL to return to the [Fun] menu.

5.5.1. Fun menu scheme



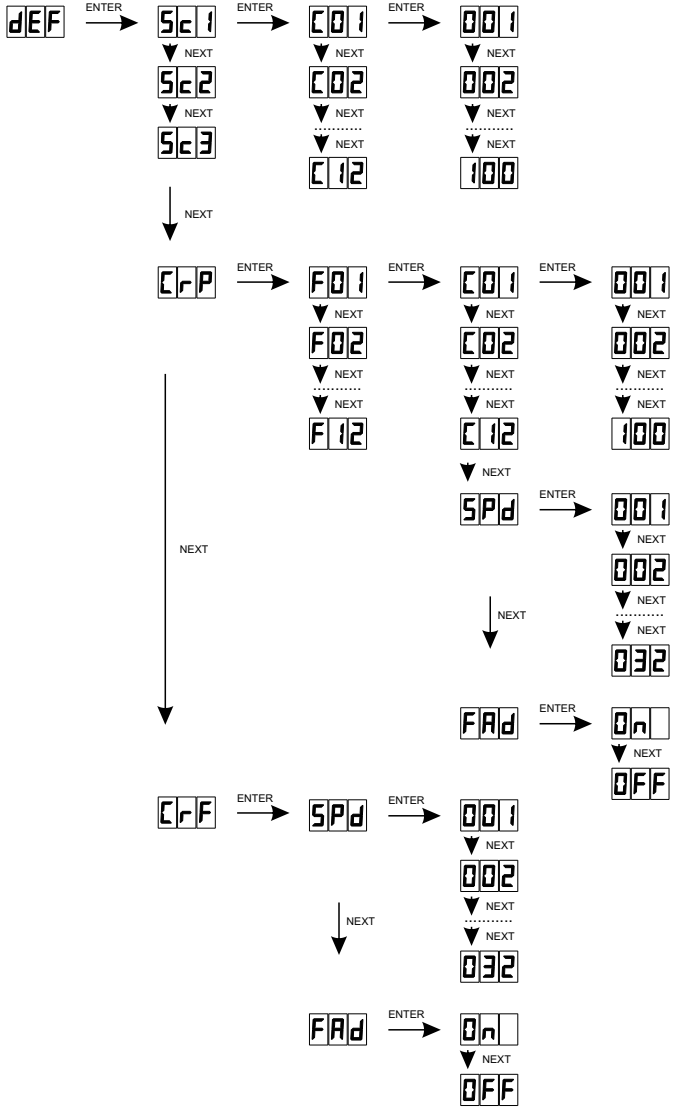
5.6. SCENES AND CHASERS PROGRAMMING (dEF menu)

In this submenu you can define scenes and chasers, that can be rendered automatically when the DMX signal is absent. After [dEF] has been chosen in the main menu, press ENTER. With NEXT or PREV keys select one of two chasers ([CrF], [CrP]) or one of three scenes ([Sc1], [Sc2] , [Sc3]) and press ENTER again. In the factory-defined chaser you can adjust its speed and fading. The programmable chaser can be defined totally. When configuring the scenes, you can set the brightness for each channel. All scenes and chasers are set by default, but you can customize them according to the description in chapters nos. 5.6.1, 5.6.2 and 5.6.3.

5.6.1. Scenes

1. In the [dEF] menu, select the scene, you want to define and press ENTER. [C01] - first channel will be displayed. Press ENTER to edit this channel.
2. With NEXT or PREV keys adjust the control value for this channel from a range from 1 to 100 (value in percentage) and confirm your selection by pressing ENTER.
3. With NEXT or PREV keys choose another channels and repeat the procedure from point 2.
4. Press CANCEL to return to the [dEF] menu and repeat the procedure from points 1, 2 and 3 for the remaining scenes.
5. Press CANCEL to return to the main menu.

5.6.2. dEF menu scheme



5.6.2. Factory-defined chaser

After the CrF in the dEF menu has been selected, press ENTER. SPd will be displayed. Press ENTER to set the chaser's speed. With NEXT or PREV keys set the value from 1 to 32 and press ENTER. Press NEXT, FAd will be displayed. Press ENTER, to set the step-to-step fading smoothness. Set On , to turn the fader on, or OFF to turn the fader off and press ENTER. Press CANCEL to return to the main menu.

5.6.3. Programmable chaser

1. After CrP has been chosen in the dEF menu, press ENTER.
2. F01 will be displayed - it is the first step of the program. Press ENTER to edit this step or with the NEXT key go to the another step and press ENTER.
3. C01 will be displayed - it is the first channel. Press ENTER, to edit this channel or, with the NEXT key, go the next channel. Adjust the control value for the selected channel in a range from 0 to 100 (value in percentage) with the NEXT or PREV keys and confirm your settings by pressing ENTER.
4. Adjust the control values for the remaining channels, according to the procedure described in point 3.
5. Press CANCEL, to leave the step edition.
6. Define the remaining steps according to the procedure described in points 2 to 5.
7. Select SPd by pressingNEXT and press ENTER, to set chaser's speed. With NEXT or PREV keys choose a required value in a range from 1 to 32 and press ENTER to confirm.
8. Press NEXT, FAd will be displayed. Press ENTER to set the step-to-step fading smoothness. With NEXT or PREV keys select On to turn the fader on, or OFF to turn the fader off and confirm your selection by pressing ENTER.

Press CANCEL, to leave the chaser edition.

6. ACCESS LOCK

Because of a great number of possibilities of defining the dimmer functions, all introduced changes can be protected with a code (a number in a range from 1 to 255). In such a case, the users, that do not know the password can read the dimmer settings only, without the ability of making any changes. The dEF position of the main menu will be also hidden.

6.1. Switching the access lock on

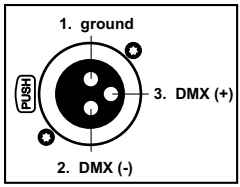
1. In the basic position of the display (DMX address of the first channel) push and hold TEST button, push shortly NEXT button and release TEST button - PAS will show.
2. Push ENTER button - Enb inscription will show. (Attention! if dSb is displayed, the access lock has already been set, refer to chapter 6.2 of the present manual)
3. Push ENTER button again and set new code using "PREV" and "NEXT" buttons (or leave the previous one). Confirm changes by pressing the ENTER button.
4. The dimmer will return to the operation mode (DMX address will be displayed). The access to the programming mode is locked.

6.2. Switching the access lock off

1. In the basic position of the display (DMX address of the first channel) push and hold TEST button, push shortly NEXT button and release TEST button - PAS will show.
2. Push ENTER button - Enb inscription will show. (Attention! if dSb is displayed, the access lock has not been already set, refer to chapter 6.1 of the present manual)
3. Push ENTER button again, 127 will be displayed. With "PREV" and "NEXT" buttons select your password and confirm your choice by pressing the ENTER button.
4. The dimmer will return to the operation mode (DMX address will be displayed). The access to the programming mode is unlocked.

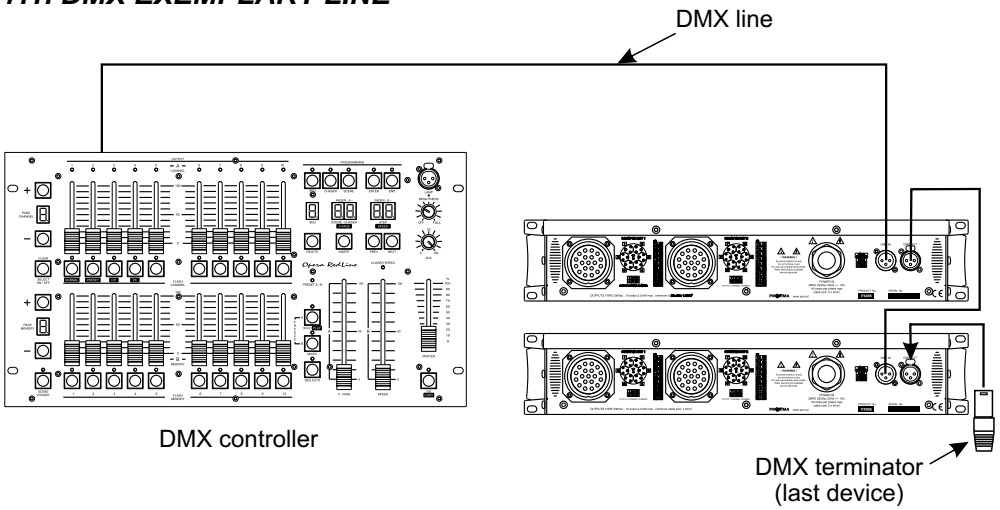
ATTENTION:
When the wrong code is entered, the inscription bAd is displayed. Repeat the procedure then. When the wrong code is entered three times, the access to the programming mode of the dimmer is completely locked: Loc is displayed. Contact the service in such case.

7. DMX SIGNAL CONNECTION

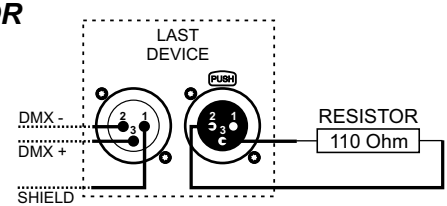


ATTENTION!! The DMX cable shield cannot be connected with the device ground!

7.1. DMX EXEMPLARY LINE



7.2. TERMINATOR

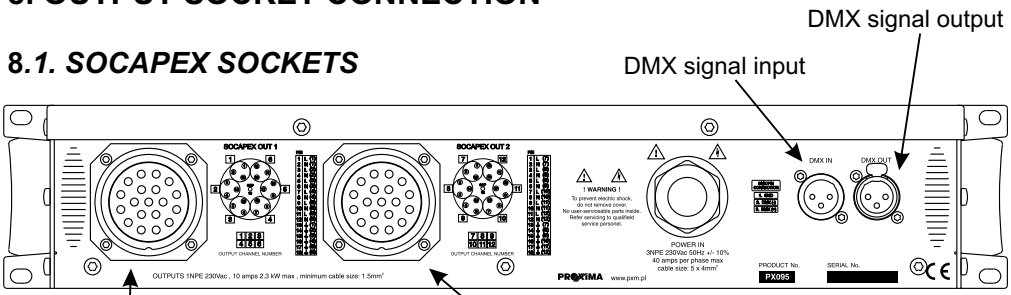


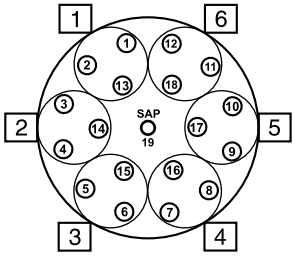
7.3. RULES OF CREATING THE DMX INSTALLATION

1. To connect devices use of the microphone cable is recommended (two strands in the shield).
2. The devices should be connected in series.
3. To split the DMX line it is necessary to use DMX SPLITTER (PX094).
4. In case of the great number of devices or long distances use DMX REPEATER (PX097). It is an amplifier of the DMX signal.
5. The maximal length of a DMX line is 500 meters.
6. The maximal number of devices in a DMX line is 32.
7. In the last device a terminator (110 Ohm resistor) between 2nd and 3rd DMX output pins should be installed.

8. OUTPUT SOCKET CONNECTION

8.1. SOCAPEX SOCKETS

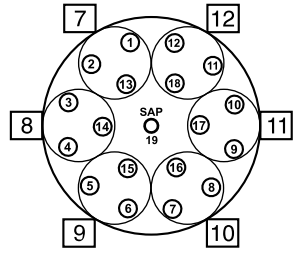




PIN	
1	L (1)
2	N (1)
3	L (2)
4	N (2)
5	L (3)
6	N (3)
7	L (4)
8	N (4)
9	L (5)
10	N (5)
11	L (6)
12	N (6)
13	⏚ (1)
14	⏚ (2)
15	⏚ (3)
16	⏚ (4)
17	⏚ (5)
18	⏚ (6)

1 2 3
4 5 6

OUTPUT CHANNEL NUMBER

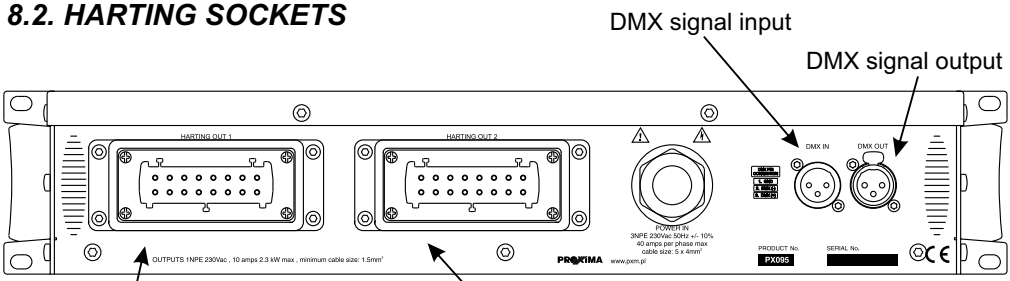


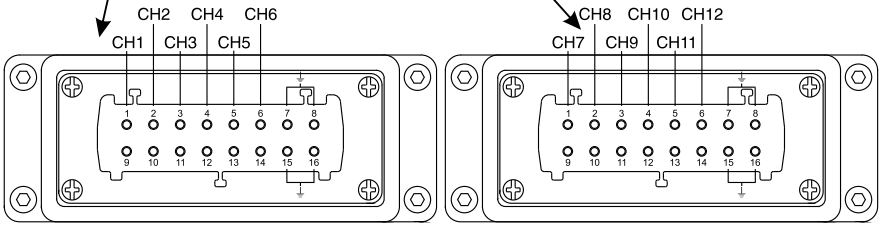
PIN	
1	L (7)
2	N (7)
3	L (8)
4	N (8)
5	L (9)
6	N (9)
7	L (10)
8	N (10)
9	L (11)
10	N (11)
11	L (12)
12	N (12)
13	⏚ (7)
14	⏚ (8)
15	⏚ (9)
16	⏚ (10)
17	⏚ (11)
18	⏚ (12)

7 8 9
10 11 12

OUTPUT CHANNEL NUMBER

8.2. HARTING SOCKETS

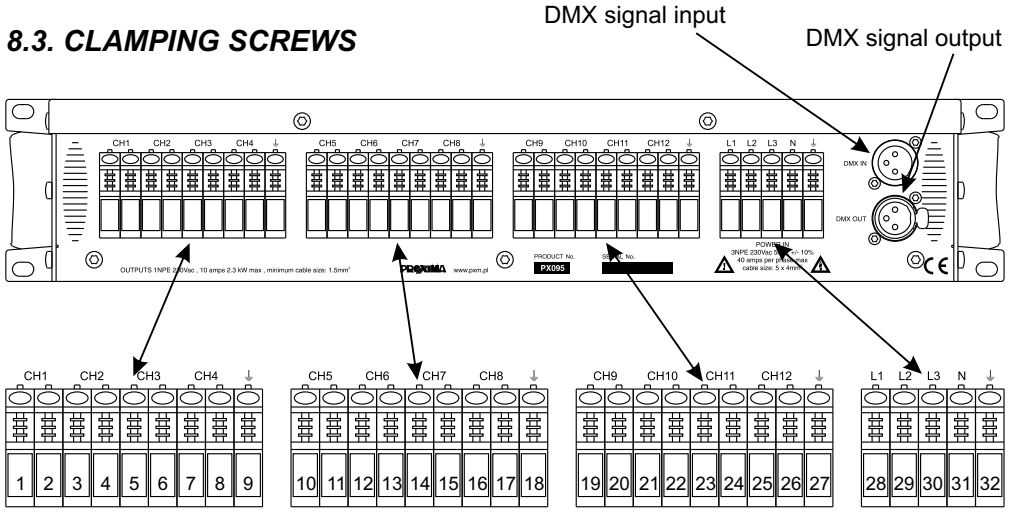




PIN	
1	L
2	L
3	L
4	L
5	L
6	L
7	⏚
8	⏚
9	N
10	N
11	N
12	N
13	N
14	N
15	⏚
16	⏚

1-6 - phase
9-14 - neutral
7,8,15,16 - protective

8.3. CLAMPING SCREWS



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
L	N	L	N	L	N	L	N	⏚	L	N	L	N	L	N	L	N	⏚	L	N	L	N	L	N	L	N	⏚	L	L	L	N	⏚

9. POWER CABLE CONNECTION

9.1. GENERAL RULES

1. Installation, particularly power connection, should be performed by a person holding the appropriate qualifications, according to description in the instruction manual.
2. The device has to have properly connected the protective cable (yellow - green strand of the power cable).
3. The power circuit, where the PX095 dimmer is connected, must be equipped with the residual-current circuit breaker.
4. The minimal power cable cross-section area is 5 x 4 mm^2.
5. The external devices can be connected to the dimmer with 3-strand 2.5 mm^2 minimum cross-section area only.
6. Each receiver has to be powered with a separate cable.
7. After the installation is completed, check the neutralization efficacy of all the powered devices.
8. All the cables must be strictly protected against mechanical and thermal damage.

9.2. POWER CABLES COLOURS

brown strand	= phase 1
black strand	= phase 2
black strand	= phase 3
blue strand	= neutral
yellow - green strand	= protective

10. TECHNICAL SPECIFICATION

- DMX channels	512
- DMX line optical insulation	yes
- circuit break detection	yes
- supertension protection	yes
- fans	electronically controlled
- outputs load capacity	12 x 2300 W continuous load (resistantive) 12 x 1600 VA continuous load (inductive)
- outputs protection	10 A automatic fuses
- DMX control input	3-pin XLR plug
- DMX control output	3-pin XLR socket
- power supply	3 phases 3 NPE 400 V or one phase 230 V, 50 / 60 Hz
- output sockets	2 x SOCAPEX, 2 x HARTING or clamping screws
- current consumption	3 x 40 A (at full load)
- weight	15 kg
- dimensions:	
- width	483 mm (19")
- heigth	88 mm (2U)
- depth	415 mm

PXM

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DECLARATION OF CONFORMITY

according to guide lines 73/23/EWG and 89/336/EWG

Name of producer: PXM s.c.

Address of producer: ul. Przemysłowa 12
30-701 Kraków

declares that the product:

Name of product: **AC Dimmer 12 x 2300 W**

Type: **PX095-X/H/Z**

answers the following product specifications:

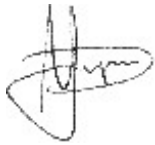
LVD: **PN-EN 60065**

EMC: **PN-EN 55014**

Additional information:

1. All DMX512 inputs and outputs must be shielded and the shielding must be connected to pin 1 XLR plug.
2. A ground wire of the dimmer load cable must be connected to efficient ground installation.

PXM S.C.
Danuta i Marek Żupnik
30-701 Kraków, ul. Przemysłowa 12
NIP 677-002-54-53



Kraków, 01.06.2006

Marek Żupnik M.Sc.